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(pages 136-143), as well as U.S. Patent Number 3,091,567 referenced by the Wurzburg reference. A *prima facie* case of obviousness under 35 U.S.C. 103 requires that the reference(s) must teach or suggest all of the claim limitations. Wurzburg references fail to teach or suggest Applicant's claims of a non-separable starch-encapsulated hydrophobic compound by teaching that Applicant's invention CANNOT be done, and by teaching a "water-repellant" encapsulant that dissolves in 72 hours. indiv.

The Wurzburg reference discusses starch encapsulated hydrophobic substances (p. 139-141) which quickly dissolve in water. The reference also discloses, in the subsection entitled *Slow-Release Encapsulating Agents*, that it is sometimes "desirable to obtain powders displaying water-repellent properties for a more gradual or controlled release." Second paragraph lines 5-7. This disclosure of Wurzburg is explained more extensively in the patent referenced on line 8 of the second paragraph: U.S. Patent Number 3,091,567 "Encapsulating Agents With Controlled Water Repellency", (attached hereto). The '567 patent discloses a method to produce an encapsulated water-insoluble substances to permit a slow, gradual release in the presence of moisture. The Wurzburg reference clearly states in column 2, lines 26 - 38 that it is important NOT to have completely water insoluble encapsulated granule. Not only would this defeat the objective of the Wurzburg invention, but "it is not seen how such (a water insoluble) agent could be dissolved in water to serve as a medium in which to emulsify the oil". In other words - the Wurzburg reference discloses that there is no possible way to end up with Applicant's invention - a starch-encapsulated hydrophobic compound that is non-separable in an aqueous formulation. This was the problem solved by Applicant - and declared unsolvable by Wurzburg. The fact that the Wurzburg references so clearly states the impossibility of obtaining Applicant's invention refutes any possible teaching or suggestion of the claim limitations. Indeed, Wurzburg clearly teaches away from Applicant's claims, by stating that it "cannot be seen how" Applicant's invention could work.

The Wurzburg '567 patent, in Example V, demonstrates what is meant by "water repellency". "After 32 hours had elapsed a number of particles were sufficiently wet so as to release the oil. Complete solution, however, was not effected until a period of more than 72 hours had elapsed." Applicant's invention, as seen in Example 3, is still stable at 3 months. Applicant's claim limitation of "non-separable in said aqueous formulation" means non-separable. Applicant's non-separable starch-encapsulated hydrophobic compound is clearly different from the dissolved in 72 hours encapsulated substance

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disclosed by Wurzburg. Wurzburg teaches away from Applicant's claim, by teaching a "water repellant" encapsulated substance that dissolves within 72 hours.

Wurzburg et al in view of Eskins et al

As shown above, the Wurzburg CRC article, and '567 patent teach that the encapsulated hydrophobe is useful only if it dissolves in an aqueous environment – the improvement being that the dissolution can be delayed for 32 to 72 hours. In addition to teaching that a water-insoluble encapsulated substance would not be useful, Wurzburg teaches that it is not seen how it could be produced. The Eskins reference describes starch-oil composite powders, in which the starch and oil do not separate. The starch-oil composites may be dispersed in water to form smooth, stable dispersions. One of ordinary skill in the art would NOT be motivated by the Wurzburg teaching of the undesirability of an encapsulant that does not dissolve in water to release the entrapped hydrophobe, to practice the Eskins teaching of a starch-oil composite that does not separate. These are exactly opposite positions! Wurzburg REQUIRES dissolution and release of the entrapped hydrophobe based on exposure to an aqueous environment (though a short delay is allowed), yet Eskins teaches NO dissolution and release of the entrapped hydrophobe based on exposure to an aqueous environment. No one of skill in the art would be motivated to put these opposite teachings together.

The Eskins reference notes that the starch-oil composites may be used for many different applications, including cosmetic and personal care product formulations (column 13, lines 57-62). The Eskins reference includes 59 examples including food, boxboard, and adhesives applications, and hydrophobic compounds useful in these applications. No examples describe a cosmetic or personal care application.

Wurzburg et al, and Eskins et al in view of Roulier

The Examiner notes that the Roulier reference teaches that the anhydrous, dry powder containing oil actives may be "incorporated in a cosmetic and/or dermatological composition which is in another galenic form, such as a lotion, W/O or O/W emulsion." Applicant points to this same teaching to show the difference between the teaching in the art, and Applicant's claims. As explained on page 2, lines 12-19 of

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the specification, Applicant claims an aqueous formulation having a starch-encapsulated hydrophobic compound, where the starch-encapsulated hydrophobic compound is essentially non-separable in said aqueous formulation. This is opposite to numerous references in the art in which a starch-encapsulated oil is placed in water to form a stable emulsion. In the emulsion, starch serves as a surfactant or protective colloid to stabilize oil droplets in an aqueous system. The starch is in a dynamic system – with starch molecules attaching to the surface of an oil drop, then detaching and reattaching to another oil droplet, while being replaced at the first droplet surface by another starch molecule. The starch and oil are stable – but they are separable – with molecules dynamically attaching/detaching/and attaching to many different oil droplets. One of skill in the art would understand that the teaching of an emulsion system is opposite Applicant's claims to a non-separable starch-encapsulated hydrophobic compound. One of skill in the art would not be motivated by the teaching of a dynamic emulsion system to practice the static, non-separable encapsulant claimed by Applicant. The Roulier reference fails to overcome the problem of Wurzburg that the starch must dissolve – indeed the Roulier disclosure of emulsion formation shows that the starch will dissolve and release the oil.

Wurzburg et al., Eskins et al., Roulier et al. in view of Fletcher et al

Claim 6 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Wurzburg et al., Eskins et al., and Roulier et al., as applied to claims 1, 2, 8-21 and 23-25, and further in view of Fletcher et al. (U.S. Patent Number 6,261,543 B1). The Fletcher secondary reference is cited to show the use of a cationically-modified starch in anti-perspirant emulsions. The Fletcher reference shows the use of starch to form stable emulsions, thereby supporting the other cited references in teaching that the starch will dissolve and release the entrapped hydrophobic substance. Since the teaching of an emulsion system – which is dynamic and in which starch and the hydrophobe constantly separate – is opposite Applicant's claims of a non-separable encapsulated compound, the Fletcher reference does not solve the shortcomings of the other cited references in showing obviousness of Applicant's claims, and therefore, in combination with the other references, does not present a prima facie case of obviousness.

Applicant respectfully submits that the foregoing is a complete response to the Office Action, and requests the Examiner to remove all rejections and pass the application to issuance at this time.

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Respectfully submitted,



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## APPENDIX 1

Version with markings to show changes made

The claims were amended in the following manner:

1. (amended) A stable, aqueous personal care or cosmetic formulation comprising:

- c) a starch-encapsulated hydrophobic compound; and
- d) water,

wherein said starch-encapsulated hydrophobic compound is essentially non-separable in said personal care or cosmetic aqueous formulation.

8. (amended) The aqueous formulation of claim 1 wherein said hydrophobic compound is selected from the group consisting of mineral oils, oils of plant and animal origin, synthetic oils, fats, lipids, fatty acids, fatty alcohols, esters, ethers, wax, jojoba oil, soybean oil, silicones, vitamins, vitamin A, vitamin D, vitamin E, and vitamin K, fragrances, emollients, petrolatum, pigments, water-insoluble polymers, anti-perspirants, sun screen actives, benzophenone-3 (oxybenzone), octyl methoxy cinnamate, water insoluble solvents, insect repellants, and mixtures thereof.